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DENTAL THERAPY ASSISTANT: COST PERFORMANCE ANALYSIS.(U)
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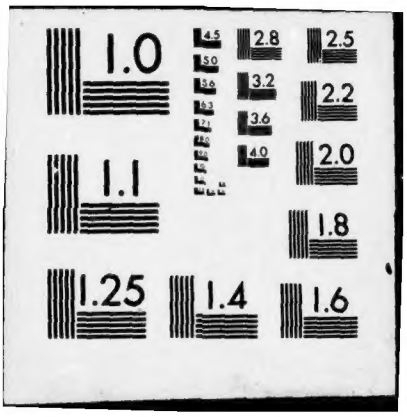
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DENTAL THERAPY ASSISTANT

COST PERFORMANCE ANALYSIS

ACADEMY OF HEALTH SCIENCES (ARMY)
FORT SAM HOUSTON, TEXAS

SEPTEMBER 1976

Report HCSD-76-006R

DENTAL THERAPY ASSISTANT: COST-PERFORMANCE ANALYSIS

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Final Report

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Expanded duty dental assistants with the title of dental therapy assistants are being trained and utilized in the US Army oral health care delivery system. The purpose of this study was to determine the relationship of salary cost to dental treatment output for the various oral health care delivery team (OHCDT) configurations utilized in Army dental treatment facilities (DTF).

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Eight OHCDT configurations were compared using four productivity indicators and three cost performance indicators.

Type of practice was compared based on the proportion of output in restorative, preventive, diagnostic, and other categories. The utilization of DTAs in OHCDTs was shown to significantly increase productivity. The findings indicate that the use of DTAs is a cost effective method of expanding the care delivery capability of dentists. The type of practice conducted by dentists without DTA support was shown to be significantly different than for DTA supported OHCDT. An optimal OHCDT configuration was not identified as more controlled studies are required to further investigate this aspect of DTA utilization.

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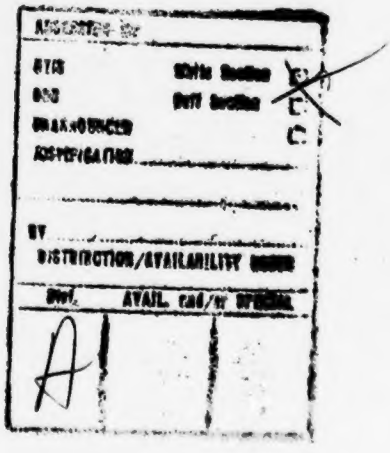

SUMMARY

1. Expanded duty dental assistants with the title of Dental Therapy Assistants (DTAs) are being trained and utilized in the US Army oral health care delivery system. The purpose of this study was to determine the relationship of salary cost to dental treatment output for the various oral health care delivery team (OHCDT) configurations utilized in Army dental treatment facilities (DTFs). Data was collected from 30 installations in the Continental United States (CONUS) for a 17 week period. OHCDTs without DTAs were used as controls. The types of dental practice were determined by the proportion of total services performed in restorative, preventive, diagnostic, and other categories. The mean number of patients seen per week, mean number of unweighted procedures accomplished per week, mean number of weighted procedures accomplished per week, and mean number of restorations placed per week were used as the primary indicators of productivity. A salary model was developed for the purpose of establishing cost performance indicators which included cost per patient treated, cost per unweighted dental procedure, and cost per weighted dental procedure. Eight single dentist OHCDT configurations were compared, seven of which included DTAs in varying numbers.

2. Significant differences in type of practice between the eight configurations were identified. OHCDTs with DTAs were shown to be significantly more productive than non-DTA teams for all productivity indicators. In general the utilization of DTAs was found to be a cost effective approach to extending the treatment capability of dentists. The data for this study did not lend itself to determining the optimal OHCDT personnel and treatment room mix. It is recommended that further controlled studies be conducted to identify important cost performance variables and to determine optimal utilization patterns for DTAs.

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1. INTRODUCTION.

a. Purpose. The purpose of this study was to determine the relationship between salary costs and dental treatment outputs for various Oral Health Care Delivery Team (OHCDT) configurations that were found in the operational dental environment. This study will provide US Army Health Services Command, Directorate of Dental Services (HSC, DDS) and the Dental Therapy Assistant (DTA) program director information which can be useful in the evaluation of the effectiveness and efficiency of OHCDT configurations. This information is currently not available from reports routinely submitted by dental services to HSC. Data for this study was obtained from dental treatment facilities (DTFs) located at 30 Continental United States (CONUS) Medical Department Activities (MEDDACs) and Medical Centers (MEDCENs) and included every DTF where trained DTAs were being utilized in non-specialty practices.

b. Background.

(1) An expanded duty dental auxiliary with the title of Dental Therapy Assistant (DTA) is being trained and utilized in the US Army dental care delivery system. The amount of care that can be provided per dental officer is expected to increase when trained DTAs are utilized; however the magnitude of the increase actually achieved in an operational environment nor the cost-effectiveness of such increases has been examined or documented in prior Army studies.

(2) In 1944, Klein reported increases of 33 to 75 percent in the dental services rendered depending on the number of dental chairs used with one assistant. Baird, et al.,[2] published a report of their experience with a pilot study in training and using expanded function auxiliaries in the Royal Canadian Dental Corps. The report indicated that personnel could be trained and utilized to increase productivity while maintaining high standards of quality. The US Navy[3] reported that dental officers operating three chairs with trained technicians increased their productivity by 80 to 100 percent. The quality of dental restorations placed by DTAs were comparable to restorations placed by dentists. The study also reported that no adverse mental or physical effects were reported by the dental officers or the technicians during the 20 week trial period. The US Public Health Service, Division of Indian Health, demonstrated program success and reported both the quantitative and qualitative results of the use of expanded duty dental auxiliaries in team practices.[4,5,6] Lotzkar, et al.,[7] indicated that a dental team consisting of four expanded duty assistants and one dentist increased productivity over an established baseline by 133 percent. It was also pointed out that when a team of three assistants and one dentist was employed, an increase of 62 to 84 percent could be realized in the overall productivity. Soricelli[8] described the experience of training, implementing, and utilizing expanded duty dental assistants with the results that an

increase in productivity and quality of services delivered was realized in an urban care delivery program.

(3) The primary considerations which led the Army Dental Corps in FY 73 to establish a pilot program for training and utilizing expanded duty auxiliaries were:

(a) The inability to satisfy all dental care needs of personnel authorized dental care with the then existing dental care delivery system, and;

(b) Several previously mentioned papers have reported the successful utilization of expanded function dental auxiliaries to increase the care delivery capability of team dentists while maintaining high quality standards.

(4) In the Army Dental Corps' pilot program 20 enlisted dental specialists were selected and trained as expanded duty dental auxiliaries. They were given the job title of Dental Therapy Assistants (DTAs). Lieutenant Colonel T. H. Heid[9] described the pilot program and reported an increase in dental officer productivity ranging from 50.2 percent to 209.8 percent depending upon team size and operating configuration. Heid, et al.,[10] reported that the quality of restorations placed and finished during the pilot program equaled those placed by dentists. In early FY 74, training and utilization of both civilian and military DTAs was approved by the Department of the Army as an official Army Medical Department Program. Approximately 900 DTAs are scheduled to be trained by the end of FY 78; 144 of these will be military personnel. An Ambulatory Patient Care (APC) Model #19, prepared by US Army Health Services Command dated July 1974 provides guidance for training and utilizing DTAs in military treatment facilities.[11]

(5) Despite the evidence directed at documenting the effect of team practice on increased services delivered per dentist, the area of cost-effectiveness, per se, has not been investigated extensively. Even if training and minor remodeling costs are discounted, it cannot be assumed that team practice is a less expensive mode of dental care delivery. It was essential that a study be conducted to determine which OHCDT configurations were the most cost-effective in an actual operating dental health care delivery system. Studies which have investigated the economic impact of team practice in private, academic, and government programs have not provided findings that directly apply towards determining the cost-effectiveness of the Army's DTA Program.[9,10] That is, increased revenue was the primary concern in most of the studies reviewed. In addition, differences in team configurations, types of practices, and methods of reporting procedures between the reported studies and the operating DTA program in the Army add to the requirement for a separate study. Following is a review of each of these prior studies.

(6) Pelton, et al.,[12,13] reported comparisons of time, productivity, gross income, costs and profit for a dentist working in a surrogate private practice with various types and numbers of dental auxiliary support. A hypothetical cost per workday was established. Base data (Team A) was collected for one dentist and two chairside assistants working in a two-chair operatory. The first comparison was with a team (Team B) which consisted of one dentist, one expanded duty dental auxiliary (EDDA), and three chairside assistants working in a three-chair operatory. A third team (Team C) was compared to the base Team A, and with Team B. Team C consisted of one dentist, two EDDAs, and four chairside assistants working in a four-chair operatory. Comparable types of procedures were performed by each team configuration. The authors primarily analyzed the economic data based on the increased revenue using the 1970 Veterans Administration fee schedule. Salary cost for auxiliaries is the major cost increase identified from Pelton's data. In a comparison of non-salary costs, the cost per procedure decreased with team expansions. Included in these cost figures were remodeling cost of the clinic facilities. When expendable supply costs per procedure were compared, little difference was noted. Pelton's study from a cost review standpoint indicates that a sizeable increase in auxiliary costs occurred. In a nonrevenue producing care delivery system some questions arose as to whether the increased salary costs were justified based on the increase in services delivered. For example, when Teams A and C are compared, a 60 percent increase in procedures required a 250 percent increase in salaries and benefits of auxiliaries.

(7) Redig, et al.,[14] in their study of EDDAs in four private dental offices state that there were relatively minor changes in average expense per eight hours of time for dental laboratory fees, drugs, and supplies. Salary and fringe benefit costs, which included new auxiliaries and pay increases, did increase $47.00 per eight hours. Again the predominate increase in cost of using EDDAs was salary and related costs. The authors concluded that the project demonstrated that EDDAs were economically feasible and permitted the dentist to deliver more dental services in less time.

(8) Soricelli[8] reported an increase in dentist productivity by 400 percent while operating costs were cut in half. He also stated that the greatest single cost factor was the salaries of personnel.

(9) Abramowitz and Berg[15] compared the cost per relative time unit (RTU) for four practice configurations. The cost per RTU became less as the team sizes increased. The costs included a full range of dental practice operating costs. As might be expected, the salary cost increase was the principle changing factor. The use of an RTU rather than unweighted procedures may account for this more favorable cost relationship. The team sizes in this study were one dentist with three, four,

and five EDDAs. The authors stress the importance of considering the operating speed of the dentist in selecting the team configuration.

(10) Robinson and Bradley[16] conducted a comparison of using EDDAs with senior dental students. Using salary costs as the difference in operating expense, the use of the EDDA was not economically feasible at the lower limit of the 95 percent confidence limit based on the fee scale as potential revenue. They commented on the variance in the speed of operation of senior dental students. Since relatively inexperienced dental officers are frequently assigned as team leaders, the Army Dental Corps is in need of information that will permit an objective evaluation of the DTA Program's cost-effectiveness.

(11) The studies reviewed identify, as expected, that salaries are indeed the largest single cost when EDDAs are incorporated into dental practice. The review substantiates the need for conducting a cost-effectiveness analysis of the DTA Program in the actual operating situation in order to identify the most cost-effective types of team configurations.

2. OBJECTIVES. The objectives of this study were:

a. To determine the extent of the increase in dental care delivered by dental officers when trained DTAs are utilized in various OHCDT configurations under routine operating programs.

b. To determine the cost-effectiveness of utilizing DTAs based on comparisons of output units to salary costs associated with gaining an increase in care delivered by dental officers using DTAs in a team practice concept.

3. METHODOLOGY.

a. Overview. DTFs at 30 CONUS Army installations were selected as test sites. The basis for selecting specific installations as study sites were installation size, number of trained DTAs, number and arrangement of dental treatment rooms (DTRs), type of practice (i.e., categories of services provided), and comparability of solo and team practices. An economic analysis was conducted to determine personnel costs associated with the utilization of trained DTAs to enhance the treatment capability of dental officers. Resources and expenditures which are not related to the mode of dental practice utilized were not considered in the economic analysis for this study. Individual and team performance were established by determining the category and number of procedures (weighted) performed and the number of patients treated during the data collection phase. A salary cost model was used to determine the cost per procedure for each practice mode used in this study.

b. Procedures.

(1) Information Collected. Two types of information were collected for each OHCDT selected for this study. The first described the number and type of personnel comprising each OHCDT and the number of DTRs utilized. The second type of information consisted of the number and types of dental procedures accomplished. This information was recorded daily on a Dental Service Report DD Form 477 (see Appendix A) by each OHCDT. The dental procedures consisted of those procedures listed on DD Form 477. Relative value units (RVUs) for each procedure are listed at Appendix B. RVUs are weights which have been developed by the California Department of Health for use in their dental accountability system. The list at Appendix B contains weights for procedures recorded on DD Form 477. These "fee-for-service" based weights are currently used by HSC to compare dental productivity at comparable installations. In the Reporting Facility and Location block of the form, the installation name, clinic designator, installation identification number and team identification numbers were listed. The installation numbers were assigned by HCSD. Team numbers were assigned at the installation by the Resources Training Officer beginning with one and ascending consecutively until all participants were included. The following procedures were added to DD Form 477 in the areas stated:

Part 1, A., line 8. -- Filling polished

Part 1, A., line 16. -- Casts

Part 1, B., line 21. -- Orthodontic appliance

Part 1, C., line 33. -- Cellulitis

Part 1, D., line 43. -- Preventive Dentistry Counseling

Part 1, F., line 49. -- Periodontal Screening Examination

Part 1, F., line 50. -- Hours of Operation (daily)

Part IV, -- Team Configuration
Number of Dental Officers_____
Number of Dental Assistant(s)_____
Number of DTA(s)_____
Number of DTR(s)_____
Check one: Open Bay_____
Individual Room(s)_____
Name and Rank of Dental Officer_____
Name and Rank/GS Grade of each DTA_____

The names of dental officers and DTAs were obtained to determine if there were enough teams with stable composition to perform the required data

analysis. Part IV, Remarks Section, was used to record information about the mode of practice and type of team configuration as illustrated in the sample DD Form 477 (see Appendix A).

(2) Information Collection Procedures. Information was recorded daily by designated clinic personnel for each OHCDT and forwarded to the installation Resources Training Officer (RTO) on a weekly basis. A single form was used by the installation RTOs to record one week's data. Columns A through E were designated Monday through Friday, respectively, instead of categories of patients. Columns F and G were used by Health Care Studies Division (HCSD) personnel for data summarization. The RTOs submitted worksheets to the HCSD project officer on a monthly basis. Summary tabulations and transfer of data to punched cards was accomplished by HCSD personnel.

(3) Sampling Procedures. Team practices at 24 CONUS installations using trained DTAs constituted the test groups in the study. Dental officers in non-specialty individual practices at the same installations served as controls. Additional data from dental officers in individual practice was obtained from Yuma Proving Ground, Fort Sheridan, Fort Eustis, Dugway Proving Ground, Fort McClellan, and Fort Polk.

(4) Weighting Factors. The reported raw procedures were converted to weighted procedure values. The weighting system is currently used by HSC to provide an improved management indicator. The California RVU system was programmed in the computer to convert the raw procedures to weighted procedures. RVUs for the 49 procedures reported on DD Form 477 were abstracted from a list of approximately 150 dental procedures listed by the State of California Department of Health. The values are furnished in Appendix B, and are a "fee-for-service" based weighting factor.

(5) Salary Model. The salary scales used in this study were based on military and civilian pay scales in effect as of October 1974. OHCDT configurations were assigned salary costs based on:

(a) The dental officer being an O-3 with more than four but less than six years of service for pay purposes;

(b) The trained DTA being a GS-6, Step 5, and;

(c) The dental assistant (DA) being a GS-4, Step 5.

These pay levels represent the usual grade structure of the personnel working in the program under study. The following weekly salary costs were derived:

Dental Officer - $338.00 per week

DTA - $212.00 per week

DA - $165.00 per week

These weekly salary rates were applied to the appropriate configurations reported on the DD Form 477 via a computer program.

(6) Practice Analysis. The type of practice conducted by each configuration was analyzed by comparing the percent of total output units which were reported in each of four categories: restorative, diagnostic, preventive, and other. The two types of output measures used in this study consisted of RVUs and the unweighted procedures.

(7) Data Processing. Transfer of data to punched cards was accomplished by Production Division, Directorate of Management Information Systems, HSC. Data analysis was performed using the pre-programmed Statistical Package for Social Sciences (SPSS) through the computer terminal located in the Systems Design and Analysis Division (SDAD), AHS. The terminal is on-line with the Control Data Corporation 6500 Computer, Fort Leavenworth, KS, where the SPSS is on file.

4. FINDINGS.

a. Total Sample.

(1) Number of Configurations. Tabulation of the number of different configurations reported indicated that 28 combinations of personnel and dental treatment rooms (DTRs) were being used at the 24 installations using DTAs. However, a review of the total number of work weeks of data reported for each different configuration indicated that six of these reported less than 16 work weeks of data and that these six team configurations resulted from temporary assignments of personnel and/or DTRs. One of the remaining configurations was eliminated from further analysis because it was a specialty practice. Two other reported configurations were not used because the study reporting procedures were not followed and individual team output could not be identified on a weekly basis. Thus, there remained 19 configurations for which 16 or more work weeks of data were reported. A list of the configuration composition ranked by number of work weeks of data reported is shown in Table 1. The four elements which are used to determine team configuration are number of dental officers (DOs), number of dental therapy assistants (DTAs), number of dental assistants (DAs), and number of dental treatment rooms (DTRs). These elements will be considered in that order throughout this report and configurations will be coded by using the numerical composition separated by hyphens in the order described in the previous sentence. That is, a team consisting of 1 DO,

2 DTAs, 1 DA, and 2 DTRs will be illustrated as 1-2-1-2. The 1-0-1-1 and the 1-0-1-2 are considered as control configurations since they were not augmented by DTAs.

(2) Total Sample. There were 2,737 work weeks of data reported by the 19 configurations listed in Table 1. Based on work-weeks reported, the first eight ranked configurations constitute the most frequently used OHCDT configurations found in this study and contributed 2,411 work-weeks of data for analysis. The remaining 11 configurations contributed less than 12 percent of the total work-weeks of data. The control configuration (1-0-1-1) had 1,050 work-weeks of data which was collected from 20 dental activities. Table 2 describes the distribution of the work-week data base for the eight OHCDT configurations selected for comparison by number of OHCDTs and number of installations involved. The 1-3-1-3 configuration had 120 work-weeks of data, the fewest number of work-weeks for the eight most popular configurations, which was collected from five installations.

b. Selected Sub-Sample.

(1) Type of Practice.

(a) The type of practice was determined by classifying the dental procedures listed on DD Form 477 (At Appendix A) into restorative, diagnostic, preventive, and other categories. Proportions for each procedure category were calculated using unweighted dental procedures and RVUs. Table 3 shows the distributions of categories of procedures in weighted work units while Table 4 shows the unweighted dental work unit distribution for each of the eight OHCDT configurations under consideration along with the ranges for each category. A one-way analysis of variance (ANOVA) was performed to determine if differences between the eight configurations were statistically significant; however, this test did not identify where the differences between configurations were located. Simple effects tests were performed to further investigate differences between the means.

(b) One-way ANOVA indicated that significant differences existed between means for the proportion of total RVUs that were categorized as restorative ($F=23.299(7/2403)$, $p < .001$). Simple effects tests (Duncan's Multiple Range Test, $p < .05$) indicated that the control configuration (1-0-1-1) was not significantly different ($p < .05$) than the 1-3-1-3 configuration in the proportion of RVUs reported for restorative services as shown in Figure 1. Both of these configurations demonstrated a significantly smaller ($p < .05$) proportion of their total RVUs for restorative (.62 and .64 respectively) than the six other configurations. The 1-2-2-2 configuration was significantly different ($p < .05$) than the other configurations in proportion of restorative RVUs produced (.80).

(c) The proportions of preventive RVUs between configurations were shown to be different by a one-way ANOVA test ($F=131.364(7/2403)$, $p < .0001$). Duncan's procedure identified the 1-0-1-1 as different than all other configurations and producing the smallest proportion of preventive RVUs (.03) for the eight configurations considered (Figure 2). Configurations 1-2-2-3, 1-2-1-2, and 1-3-1-3 produced significantly higher proportions of preventive RVUs than the other configurations but did not differ from each other at the .05 level of significance.

(d) A one-way ANOVA was performed on proportions of total RVUs reported for diagnostic procedures which indicated significant differences between configurations ($F=18.715(7/2403)$, $p < .0001$). Simple effects tests (Duncan's procedures, $p < .05$) indicated that the control configuration (1-0-1-1) did not differ from the 1-3-1-3 configuration but that the 1-3-1-3 configuration differed from all other configurations in the proportions of RVUs attributed to diagnostic procedures. Figure 3 shows the comparative diagnostic data for all eight of the most widely used configurations. Duncan's procedure ($p < .05$) also indicated that the 1-0-1-1 and 1-3-2-3 configurations did not differ for proportions of diagnostic RVUs. The three configurations (1-0-1-1, 1-3-1-3 and 1-3-2-3) represent the configurations reporting the highest proportions of RVUs for diagnostic services.

(e) A one-way ANOVA was also performed on the proportion of total RVUs attributed to other dental services ($F=81.566(7/2403)$, $p < .0001$). Duncan's procedure identified the 1-0-1-1 configuration as being different ($p < .05$) from all other configurations in the proportion of RVUs produced for other services. Figure 4 contains findings obtained from the application of Duncan's procedure to the proportion of RVUs accomplished in the other category for the eight configurations.

(f) The type of practice was also analyzed using unweighted procedures as the performance indicator. A one-way ANOVA was performed on the unweighted restorative findings ($F=19.438(7/2403)$, $p < .0001$) which identified significant differences between configurations. Duncan's procedure ($p < .05$) was used to further identify differences between configurations and the findings are shown in Figure 5. Compared to the control (1-0-1-1), and 1-3-1-3 configuration was shown to accomplish a significantly lower proportion of restorative unweighted procedures. The 1-3-2-3 configuration and the control were shown not to differ from each other but they both accomplished a significantly lesser proportion of unweighted restorative procedures than any of the remaining six configurations.

(g) The percentage of preventive procedures accomplished was also tested for differences between the eight configurations by a one-way ANOVA ($F=124.101(7/2403)$, $p < .0001$). An analysis for further identification of differences between means (Duncan's Multiple Range Test,

p< .05) was performed and the findings presented in Figure 6. Every DTA supported OHCDT configuration was found to have accomplished a significantly higher (p < .05) proportion of unweighted preventive procedures than the 1-0-1-1 configuration.

(h) A one-way ANOVA was performed on the proportions of unweighted diagnostic procedures to determine differences between the eight configurations (F=30.886(7/2403), p< .0001). Figure 7 shows the finding of Duncan's procedure which was used to more definitely determine differences between the proportions of diagnostic services for each of the eight configurations. With the exception of the 1-3-1-3 configuration, all DTA configurations were found to have performed significantly fewer (p <.05) unweighted diagnostic procedures than the control.

(i) The proportions of other unweighted procedures as shown in Table 4 were subjected to a one-way ANOVA (F=83.704(7/2403), p < .0001) and significant differences between configurations were identified. Differences between configurations were further identified using Duncan's Multiple Range Test p < .05. Findings are shown in Figure 8 and reflect that the 1-0-1-1 configuration performed a significantly higher proportion of unweighted other procedures than any of the DTA supported configurations.

(2) Productivity.

(a) Patients treated.

1 The mean number of patients treated per week for eight OHCDT configurations is shown in Table 5. The data used to develop this table includes all work-weeks of data received except when zero patients were reported either because the team did not function for a week or because of failure to report this item of information on the DD Form 477. A one-way ANOVA was performed (F=114.435(7/2328), p < .0001) which indicated that significant differences existed between means for number of patients treated per week; however, it did not identify where the differences between configurations were located. Simple effects were performed to further investigate differences between the means (Duncan's Multiple Range Test, p < .05). Figure 9 displays the differences between configurations. The control configuration (1-0-1-1) saw an average of 38 patients per week. Duncan's procedure (p < .05) indicated this configuration mean was significantly less than all other configurations tested. The 1-3-1-3 and the 1-3-2-3 configurations means were each 79 patients per week which is significantly higher than all other configurations (p < .05). The remaining five configurations were grouped between these extremes; however, the 1-1-1-2 was shown to be different from the 1-2-1-3 and 1-2-2-3 but not significantly different than the 1-2-1-2 or the 1-2-2-2 configurations (p < .05) as shown in Figure 9.

2 A stepwise linear regression was performed on the data from the seven configurations having DTAs, DAs, and DTRs to predict weekly patients seen: The three independent variables of DTAs, DAs and DTRs were included in the equation (multiple r=.349 with multiple R^2=.121). The number of DTAs was the first variable entered in the stepwise regression (F=175.571(1/1302), p<.01; multiple R^2=.118). It should be noted that since the difference between R^2_{DTA} and R^2_{ALL} is quite small and therefore the amount of contribution to increased producitivity of the addition of DAs and DTRs is minimal.

(b) Unweighted Procedures.

1 The mean number of procedures reported per week on DD Form 477 are shown in Table 6 for eight OHCDT configurations. Mean unweighted procedures per week for DTA support OHCDTs ranged from a high of 311 for the 1-3-2-3 to a low of 172 for the 1-1-1-2 configuration. The 1-0-1-1 configuration mean of 91 procedures per week is lower than any of the DTA supported configurations. A one-way ANOVA was performed on the unweighted procedure means (F=308.998(7/2403), p<.0001), which indicated that significant differences between the means existed. Also shown in Table 6 are the low and high individual team means and the low and high installation means for each configuration. Duncan's procedure (p<.05) identified the 1-0-1-1 configuration as producing significantly fewer procedures per week than any of the DTA supported OHCDTs. This and other comparisons for differences between the eight configurations are shown in Figure 10. The 1-3-2-3 configuration was identified as producing a significantly greater number of unweighted dental procedures per week than any other configuration.

2 A stepwise linear regression was also performed on the data from the seven most popular DTA configurations to predict weekly unweighted procedures accomplished: the three independent variables of number of DTAs, number of DAs, and number of DTRs were included in the equation (multiple r=.389 with multiple R^2=.151). The number of DTAs was the first variable entered in the stepwise regression (F=209.773(1/1302), p<.01); multiple R^2=.138). It should be noted that since the difference between R^2_{DTA} and R^2_{ALL} is quite small and therefore the amount of contribution to increased productivity of the addition of DAs and DTRs is minimal.

(c) Weighted Dental Procedures.

1 Table 7 contains productivity findings for eight OHCDT configurations based on the use of weighted values for each procedure listed on DD Form 477. The values used were Relative Value Units (RVU) developed by the California Department of Health. Table 7 includes overall configuration means as well as ranges for individual teams and installations. A one-way ANOVA was performed which indicated that there were significant differences (F=146.781(7/2403,p<.01) between the eight configurations for mean RVUs produced per week. Simple effects tests were performed to further investigate differences between the means. Figure 11

contains the findings about differences between means resulting from Duncan's Multiple Range Test ($p<.05$). The findings indicate that all seven DTA supported configuration means were significantly more productive ($p<.05$) than the control configuration.

2 A stepwise linear regression was performed on seven most popular DTA configurations, to predict the weekly RVU weighted procedures accomplished: the three independent variables of number of DTAs, number of DAs, and number of DTRs were included in the equation (multiple $r=.544$ with multiple $R^2=.296$). The number of DTAs was the first variable entered in the stepwise regression ($F=972.59(1/2334)$; $p<.01$; multiple $R^2=.294$). It should be noted that since the difference between R^2_{DTA} and R^2_{All} is quite small and therefore the amount of contribution to increased productivity of the addition of DAs and DTRs is minimal.

(d) Restorations. The average number of restorations placed by the eight most popular configurations was also considered a measure of productivity. Table 8 contains the findings for the average number of restorations placed per week. A one-way ANOVA performed and significant differences between means were indicated ($F=305.334(7/2403)$, $p<.05$). Figure 12 presents the findings obtained from simple effects tests (Duncan's Multiple Range Test, $p<.05$) to further investigate the differences between means for number of restorations placed. All DTA supported OHCDTs placed significantly more ($p<.05$) restorations per week than the 1-0-1-1 (control) configuration.

(3) Cost Indicators.

(a) Cost Per Patient Treated.

1 The average costs per patient treated for eight OHCDT configurations are shown in Table 9. A one-way ANOVA was performed ($F=3.262(7/2328)$, $p<.002$) and significant differences between the means were identified. Simple effects tests were performed to further investigate the differences of means between configurations. Figure 13 shows the findings obtained when Duncan's Multiple range test ($p<.05$) was performed.

2 A stepwise linear regression was performed on the criterion variable cost per patient using the seven DTA configurations: the contribution of the independent variables of number of DTAs, number of DAs, and number of DTRs were included in the equation but their contribution was minimal in terms of the amount of variance accounted for by the analysis (less than one percent).

(b) Cost Per Unweighted Procedure.

1 The mean costs per unweighted dental procedure for eight configurations are shown in Table 10 along with the individual team and installation cost ranges for each configuration. The 1-0-1-1 configuration is shown to have the highest mean cost per unweighted procedure and the widest range of individual team and installation configuration costs.

Analysis of variance was performed (F=25.597(7/2403), p<.0001) and indicated that significant differences were present among the means. Duncan's Multiple Range Test (p<.05) was performed to identify differences between the means. Figure 14 shows each DTA supported OHCDT had a significantly lower (p<.05) cost per unweighted procedure than the control (1-0-1-1) configuration. Figure 14 also shows that no difference (p<.05) between cost per unweighted procedure for the seven DTA supported OHCDT configurations could be identified.

2 A stepwise linear regression was performed on the criterion variable cost per unweighted dental procedure using the seven most popular DTA configurations: the three independent variables of number of DTAs, number of DAs, and number of DTRs were included in the equation but their contribution was minimal in terms of the amount of variance accounted for by the analysis (6.5 percent).

(c) Cost Per RVU.

1 The cost per RVU for eight configurations is shown in Table 11, as are the individual team and installation configuration means. The control (1-0-1-1) configuration had the highest cost per RVU of the eight configurations and also had the widest range for individual team and installation mean cost per RVU. A one-way ANOVA was performed (F=4.777(7/2403), p<.0001) which indicated significant differences between means. Simple effects tests were performed to further investigate the differences between configurations and the results are illustrated in Figure 15. Six of the seven DTA supported OHCDT configurations were shown to have significantly (p<.05) lower cost per RVU than the 1-0-1-1 configuration. No differences (p<.05) were found in cost per RVU between any of the DTA supported OHCDT configurations.

2 A stepwise linear regression was performed on the criterion variable cost per RVU using the seven most popular DTA configurations: the three independent variables of number of DTAs, number of DAs, and number of DTRs were included in the equation but their contribution was minimal in terms of the amount of variance accounted for by the analysis (less than two percent).

5. DISCUSSION.

a. Sample Composition.

(1) The large number of configurations (28 reported) was not anticipated and reflected tremendous local variations in a presumably well standardized oral health care delivery program. Review of weekly input at the installation level indicated that instability of team assignments and frequent temporary team assignments (due to training, annual leave and sick leave) accounted for a substantial number of the observed changes in configurations. Changes in configurations for one week or longer were reported and were the primary cause of the large number of configurations reported. Because of the break in work-weeks

reported between the eighth and ninth ranking listed in Table 1 (from 120 work-weeks to 49 work-weeks) only the top eight work-week ranked OHCDT configurations will be discussed. In addition to the reasons stated above, other causes for unusual configurations which produced a small number of work-weeks of data were: facilities (DTR arrangement or availability), specialty practices, and unique dental care missions. Although flexibility is allowed in modifying dental practice configuration at the local level in order to most effectively accomplish the dental mission, guidelines set forth in HSC Ambulatory Patient Care Model #19, Army's Dental Therapy Assistant Program[11] and experience factors available from controlled studies[7,9] were expected to be more closely followed. The wide variation in configurations also suggests the need for more controlled conditions in any future DTA performance studies conducted in the Army oral health care environment.

(2) Of the seven most popular DTA supported OHCDT configurations, four were based around a one dentist to two DTA ratio. Studies by the Division of Indian Health, United States Public Health Service (USPHS)[4,6,7] have recommended larger DTA to dentist ratios within a range of from three DTAs to one dentist up to five DTAs to one dentist. The type of practice and range of services provided are not described in detail. The dentists working with the DTAs are also their trainers and are familiar and experienced with expanded duty practice. Dental officers used for the project being reported frequently had neither previously worked with DTAs nor had they received special training in the utilization of DTAs. Lotzkar, et al.,[7] describes a three DTA to one dentist as the recommended ratio based on the results of controlled studies conducted by the Manpower Development Center, USPHS at Louisville, Kentucky. These findings resulted from selected services being performed on a controlled population. The population was controlled by the number permitted for input and by type of dental services required so that the prescribed "time block" appointing system could be used with a minimum amount of DTA "down time." This feature was neither controlled in the study being reported nor was information about selectivity of patient input or use of the "time block" appointing system collected. Soricelli[8] recommends a four DTA to one dentist ratio based on his experience in an urban children's dental program. The population and type of services delivered in such a limited scope of practice differ from the Army's dental care delivery spectrum. In addition, Soricelli's program used a selection process in hiring dentists to be employed that permits assurance of experience and capability to work within this ratio of expanded auxiliary practice. The finding that three-fourths of DTA OHCDTs in the seven most frequently used DTA configurations are formed with a smaller than three DTA to one dentist ratio is not unreasonable in view of the following limiting circumstances:

(a) Most Army dental officers available for assignment as OHCDT leaders are inexperienced both as dental care providers and as managers of auxiliary personnel.

(b) The DTA Program, at the time this project was conducted, was operating in dental treatment facilities which had not been constructed for the DTA supported OHCDTs.

(c) The organizational structure of DTFs precludes the delegation of authority to restrict or select the population to be treated to the level of the team leader.

(d) Patient needs and treatment priorities determine type of services to be performed and create problems with the universal use of the "time block" appointment system. In addition to discussion of practice type, productivity, and cost indicators the limiting circumstances must also be considered in determining the DTA-to-dentist ratios that will serve as the OHCDT configuration base.

b. Type of Practice.

(1) The data presented in Table 2 describes the type of practice reported by the sample in terms of the proportion of output units for restorative, preventive, diagnostic, and other care. The rankings by percentage of restorative procedures do not change regardless of the output accountability system used. One-way analyses of variance of the eight configurations were performed and significant differences ($p < .0001$) were indicated among configurations for each category of dental procedure for each output accountability system. However, recommendations concerning the effect of configuration on anticipated or optimal expectations about the percentage of each category of care cannot be made. Differences in variables which were present but could not be controlled between individual teams, clinics and/or installations were:

(a) The dental care mission.

(b) Philosophy of practice.

(c) Experience of team dentist.

(d) Experience of DTAs.

(e) Dental hygienist support

(f) Patient workload and flow.

(g) Procedures which DTAs are permitted to perform.

Therefore, the data presented in Table 2 should be considered only as an historical documentation of the types of practice that existed for these configurations during the data collection period.

(2) When DTA supported OHCDT configurations were compared for percent of total unweighted procedures and RVUs performed for restorative services, only the three DTAs to one dentist configuration did not consistently produce a higher proportion of total output for restorative services over the 1-0-1-1 configuration. Based on the findings presented in Figures 1 and 5, DTA supported OHCDTs were shown to compare very favorably with the control configuration proportion of output in restorative services. Interpretation of the findings shown in Table 3 and Figures 2, 4, 6, and 8 indicate that the major difference in type of practice between the control and DTA OHCDTs is in the preventive and other categories. The proportion of output for preventive services is higher for the DTA OHCDTs while the proportion of other services is low compared to the control. This is not surprising since preventive services (calculus removal, prophylaxis, and oral health instructions) are customary and appropriate services to be delegated by dentists to hygienists. However, the the point which must be stressed is that these services were provided by DTAs within the DTA OHCDTs as part of their care sequence while the dentist without DTA support is assumed to have referred patients to a hygienist for preventive services. Thus, the control or non-DTA OHCDT type of practice would require dental hygienist support to provide services in the proportions shown in Table 3 and still provide preventive services. Although the 1-0-1-1 has been referred to as the control OHCDT because it was not DTA supported, it differs from the test OHCDT configuration in type of practice.

c. Productivity.

(1) Use of mean number of patients treated per week as a productivity measure clearly indicates that the DTA supported dentist can see more patients. Figure 9 also identifies the one dentist to three DTA OHCDT configurations as being more effective in increasing the number of patients seen by any of the other six configurations.

(2) Unweighted dental procedures as recorded on DD Form 477 reflects productivity in more descriptive terms than number of patients seen, since OHCDTs performing multiple procedures per patient can be identified. OHCDTs with one dentist supported by DTAs in the seven configurations observed demonstrated a significant increase in the number of unweighted procedures produced per week. Figure 10 contains findings that emphasize the effectiveness of using DTAs to increase OHCDT productivity.

(3) The third measure of productivity used for the study was the weekly number of RVUs accomplished. This measure again indicates that OHCDTs supported by DTAs have increased productivity over OHCDTs not supported by DTAs.

The one dentist to three DTA OHCDT configurations were shown to have accomplished significantly more RVUs per week than the other six configurations.

(4) Regardless of the productivity measure used, stepwise linear regressions indicated that among the DTAs, DTRs and DAs in the seven DTA supported OHCDTs, the number of DTAs assigned per team was the most significant contributor for predicting number of patients seen, number of unweighted dental procedures performed, and number of RVUs produced. The correlation between the number of DTAs and the number of DTRs was highly related (r=.89). Additional ANOVAs were performed to detect differences between configurations that differed only in number of DTRs or in numbers of DAs (example: 1-2-1-2 versus 1-2-2-2 and 1-2-1-2 versus 1-2-1-3). There were three comparisons made for DAs and two for DTRs. The addition of a DTR in excess of the number of DTAs per team was not shown to significantly increase productivity. The comparisons between configurations differing in the number of DAs did not indicate that the addition of a second DA per OHCDT significantly increased productivity.

(5) Three productivity indicators were used to compare the eight reported OHCDT configurations. One configuration did not contain DTAs (1-0-1-1) and was considered the control for this study. OHCDTs using DTAs were shown to be more productive by each of the indicators. In general, the ratio of one dentist to three DTAs was found to be the most productive combination observed in the seven DTA supported OHCDTs. In addition to the three productivity indicators the mean number of restorations accomplished per week for the eight configurations was tabulated and differences compared (Table 7, Figure 12). The results of this comparison support the findings already discussed and add to the impact of the effectiveness of the utilization of DTAs since the need for restorations constitutes one-third of the corrective treatment requirement for the active duty Army[18]. The DTA program was intended to increase the restorative capability of Army dentists[11] and based upon the results obtained from the eight configurations observed, the program has been successful.

d. Cost Indicators.

(1) The cost-effectiveness portion of this study was based on a comparison of the mean cost per output unit for each of the three productivity indicators. One of the seven DTA supported OHCDTs (1-2-2-2 configuration) was significantly more costly than the 1-0-1-1 configuration. This configuration is one of the three that includes assignment of two DAs to the OHCDT, a process which has been shown not to be a significant contributor to increasing productivity. Figure 13 illustrates that no differences were found between any of the other six DTA configurations and the control configuration for cost per patient seen. The analysis of the cost per unweighted procedure indicates that

all seven DTA configurations had a lower mean cost per procedure than the control configuration and that no differences were identified between DTA configurations for this cost indicator. The cost pattern, when cost per RVU becomes the indicator, revealed that six DTA configurations had a significantly lower cost per RVU compared to the control, while no difference between the 1-2-2-2 configuration and the control was identified.

(2) The stepwise linear regression analyses indicated that in terms of the total variance, the cumulative effect of DTAs, DAs, and DTRs on any cost indicator was minimal. Since other unidentified variables, such as the ones hypothesized in 5a(2)(a) through (g), may account for a substantial amount of the total variance, additional controlled studies are needed in order to indicate with a high degree of reliability the most cost-effective OHCDT configurations.

(3) Evaluation of type of practice, productivity and cost indicators strongly suggest the need for more controlled studies to determine the optimal utilization patterns for DTAs. The study indicates that DTAs can be used in Army dental practice cost effectively to permit more patients to be treated without an increase in the number of dentists. Although the cost performance and productivity indicators differed significantly among configurations, it is not possible to determine from this study if individual patients received the same type and extent of treatment within each mode of care delivery.

6. CONCLUSIONS.

a. There is presently significant uncertainty in the field about what the ideal OHCDT configuration should be, as indicated by the unexpectedly large number of different OHCDT configurations found in this study.

b. An optimal or most cost-effective DTA team configuration was not identified from the information obtained during this study. There is reason to suspect that the different types of practices reported by similar type teams may have been largely due to uncontrolled and unmeasured variables; e.g., experience of the team dentist, treatment mission of the clinic, treatment needs of the population, patient input and flow patterns, treatment policies and philosophies of the local oral health care managers.

c. The type of practice conducted by OHCDTs with DTAs is distinctly different than for non-DTA OHCDTs. Of the four categories of practice (<u>restorative</u>, <u>preventive</u>, <u>diagnostic</u>, and <u>other</u>), the two which strongly differ between the DTA and non-DTA OHCDTs are the <u>preventive</u> category and the <u>other</u> category. The factors which cause these differences were not specifically identified in this study.

d. OHCDT's using DTAs in the Armys oral health care delivery system are more productive than non-DTA OHCDTs when number of patients treated, number of unweighted dental procedures, and number of weighted dental procedures accomplished per week are used as productivity indicators. In general the 1-3-1-3 and the 1-3-2-3 configurations were the most productive configurations observed in this study for overall total output.

e. OHCDTs with DTAs were found to be cost-effective when compared to non-DTA teams. Cost-effectiveness was examined by three cost indicators: Cost per patient treated, cost per unweighted dental procedure, and cost per weighted dental procedure (RVU).

f. An extra dental treatment room (DTR) per OHCDT in excess of the number of DTAs on the team does not significantly increase productivity in the configurations observed in this study.

g. Two dental assistants (DAs) per DTA OHCDT does not significantly increase productivity over that attained by DTA teams with one dental assistant in the team configurations observed in this study.

7. RECOMMENDATIONS.

a. It is recommended that the findings presented in this report be considered for use in monitoring and evaluating operational DTA Programs.

b. It is recommended that Directors of Dental Services be furnished the information presented in this report for consideration in DTA program planning and evaluation at the local level.

c. It is recommended that a study be accomplished with controls on such factors as team composition and configuration, personnel rotation policies, workload patterns, and team management policies to determine optimal DTA OHCDT configurations for use in the Army dental care delivery system.

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FIGURE 1

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON PROPORTION OF RELATIVE VALUE UNITS ACCOMPLISHED FOR RESTORATIVE SERVICES.

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	-	-	-	-	-	0	-
1-1-1-2	+	0	+	+	-	+	+	+
1-2-1-2	+	-	0	0	-	0	+	0
1-2-1-3	+	-	0	0	-	0	+	0
1-2-2-2	+	+	+	+	0	+	+	+
1-2-2-3	+	-	0	0	-	0	+	0
1-3-1-3	0	-	-	-	-	-	0	-
1-3-2-3	+	-	0	0	-	0	+	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

+ SIGNIFICANTLY GREATER
- SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 2

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON PROPORTION OF RELATIVE VALUE UNITS ACCOMPLISHED FOR PREVENTIVE SERVICES

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	-	-	-	-	-	-	-
1-1-1-2	+	0	-	-	-	-	-	-
1-2-1-2	+	+	0	+	+	0	0	+
1-2-1-3	+	+	-	0	0	-	-	-
1-2-2-2	+	+	-	0	0	-	-	-
1-2-2-3	+	+	0	+	+	0	0	+
1-3-1-3	+	+	0	+	+	0	0	+
1-3-2-3	+	+	-	+	+	-	-	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

\+ SIGNIFICANTLY GREATER
\- SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 3

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON PROPORTION OF RELATIVE VALUE UNITS ACCOMPLISHED FOR DIAGNOSTIC SERVICES

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	+	+	+	+	+	0	0
1-1-1-2	–	0	0	0	0	+	–	–
1-2-1-2	–	0	0	0	0	0	-	-
1-2-1-3	–	0	0	0	0	0	–	–
1-2-2-2	–	0	0	0	0	0	–	–
1-2-2-3	–	–	0	0	0	0	–	–
1-3-1-3	0	+	+	+	+	+	0	+
1-3-2-3	0	+	+	+	+	+	–	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

+ SIGNIFICANTLY GREATER
- SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 4

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON PROPORTION OF RELATIVE VALUE UNITS ACCOMPLISHED FOR OTHER SERVICES

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	+	+	+	+	+	+	+
1-1-1-2	–	0	0	0	+	0	0	0
1-2-1-2	–	0	0	0	0	0	0	0
1-2-1-3	–	0	0	0	+	0	0	0
1-2-2-2	–	–	0	–	0	0	–	0
1-2-2-3	–	0	0	0	0	0	0	0
1-3-1-3	–	0	0	0	+	0	0	0
1-3-2-3	–	0	0	0	0	0	0	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

+ SIGNIFICANTLY GREATER
– SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 5

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON PROPORTION OF UNWEIGHTED DENTAL PROCEDURES ACCOMPLISHED FOR RESTORATIVE SERVICES

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	–	–	–	–	–	+	0
1-1-1-2	+	0	+	0	–	+	+	+
1-2-1-2	+	–	0	0	–	0	+	0
1-2-1-3	+	0	0	0	–	0	+	+
1-2-2-2	+	+	+	+	0	+	+	+
1-2-2-3	+	–	0	0	–	0	+	0
1-3-1-3	–	–	–	–	–	–	0	–
1-3-2-3	0	–	0	–	–	0	+	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

+ SIGNIFICANTLY GREATER
– SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 6

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON PROPORTION OF UNWEIGHTED DENTAL PROCEDURES ACCOMPLISHED FOR PREVENTIVE SERVICES

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	-	-	-	-	-	-	-
1-1-1-2	+	0	-	-	0	-	-	-
1-2-1-2	+	+	0	+	+	0	0	+
1-2-1-3	+	+	-	0	+	-	-	-
1-2-2-2	+	0	-	-	0	-	-	-
1-2-2-3	+	+	0	+	+	0	0	+
1-3-1-3	+	+	0	+	+	0	0	+
1-3-2-3	+	+	-	+	+	-	-	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

+ SIGNIFICANTLY GREATER
- SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 7

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON PROPORTION OF UNWEIGHTED DENTAL PROCEDURES ACCOMPLISHED FOR DIAGNOSTIC SERVICES

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	+	+	+	+	+	0	+
1-1-1-2	–	0	0	0	0	+	–	0
1-2-1-2	–	0	0	0	0	0	–	–
1-2-1-3	–	0	0	0	0	0	–	–
1-2-2-2	–	0	0	0	0	0	–	–
1-2-2-3	–	–	0	0	0	0	–	–
1-3-1-3	0	+	+	+	+	+	0	+
1-3-2-3	–	0	+	+	+	+	–	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

\+ SIGNIFICANTLY GREATER
– SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 8

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON PROPORTION OF UNWEIGHTED DENTAL PROCEDURES ACCOMPLISHED FOR <u>OTHER</u> SERVICES

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	+	+	+	+	+	+	+
1-1-1-2	–	0	+	0	+	+	+	0
1-2-1-2	–	–	0	0	0	0	0	0
1-2-1-3	–	0	0	0	+	+	0	0
1-2-2-2	–	–	0	–	0	0	0	0
1-2-2-3	–	–	0	–	0	0	0	0
1-3-1-3	–	–	0	0	0	0	0	0
1-3-2-3	–	0	0	0	0	0	0	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

\+ SIGNIFICANTLY GREATER
– SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 9

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON MEAN NUMBER OF PATIENTS TREATED PER WEEK

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	–	–	–	–	–	–	–
1-1-1-2	+	0	0	–	0	–	–	–
1-2-1-2	+	0	0	0	0	–	–	–
1-2-1-3	+	+	0	0	0	0	–	–
1-2-2-2	+	0	0	0	0	0	–	–
1-2-2-3	+	+	+	0	0	0	–	–
1-3-1-3	+	+	+	+	+	+	0	0
1-3-2-3	+	+	+	+	+	+	0	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

\+ SIGNIFICANTLY GREATER
\- SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 10

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON MEAN NUMBER OF UNWEIGHTED DENTAL PROCEDURES ACCOMPLISHED PER WEEK

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	–	–	–	–	–	–	–
1-1-1-2	+	0	–	–	–	–	–	–
1-2-1-2	+	+	0	0	–	–	–	–
1-2-1-3	+	+	0	0	–	–	–	–
1-2-2-2	+	+	+	+	0	0	–	–
1-2-2-3	+	+	+	+	0	0	–	–
1-3-1-3	+	+	+	+	+	+	0	–
1-3-2-3	+	+	+	+	+	+	+	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

\+ SIGNIFICANTLY GREATER
– SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 11

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON MEAN NUMBER OF RELATIVE VALUE UNITS ACCOMPLISHED PER WEEK

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	–	–	–	–	–	–	–
1-1-1-2	+	0	–	–	–	–	–	–
1-2-1-2	+	+	0	0	0	–	–	–
1-2-1-3	+	+	0	0	0	0	–	–
1-2-2-2	+	+	0	0	0	0	–	–
1-2-2-3	+	+	+	0	0	0	–	–
1-3-1-3	+	+	+	+	+	+	0	0
1-3-2-3	+	+	+	+	+	+	0	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

\+ SIGNIFICANTLY GREATER
\- SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 12

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON MEAN NUMBER OF RESTORATIONS PLACED PER WEEK

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	–	–	–	–	–	–	–
1-1-1-2	+	0	–	–	–	–	–	–
1-2-1-2	+	+	0	–	–	–	0	–
1-2-1-3	+	+	+	0	–	0	+	–
1-2-2-2	+	+	+	+	0	+	+	0
1-2-2-3	+	+	+	0	–	0	+	–
1-3-1-3	+	+	0	–	–	–	0	–
1-3-2-3	+	+	+	+	0	+	+	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

\+ SIGNIFICANTLY GREATER
– SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 13

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON MEAN COST PER PATIENT TREATED

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	0	0	0	-	0	0	0
1-1-1-2	0	0	0	0	-	-	0	0
1-2-1-2	0	0	0	0	-	0	0	0
1-2-1-3	0	0	0	0	-	-	0	0
1-2-2-2	+	+	+	+	0	0	+	+
1-2-2-3	0	+	0	+	0	0	+	+
1-3-1-3	0	0	0	0	-	-	0	0
1-3-2-3	0	0	0	0	-	-	0	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

+ SIGNIFICANTLY GREATER
- SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 14

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCE BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON MEAN COST PER UNWEIGHTED DENTAL PROCEDURE

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	+	+	+	+	+	+	+
1-1-1-2	-	0	0	0	0	0	0	0
1-2-1-2	-	0	0	0	0	0	0	0
1-2-1-3	-	0	0	0	0	0	0	0
1-2-2-2	-	0	0	0	0	0	0	0
1-2-2-3	-	0	0	0	0	0	0	0
1-3-1-3	-	0	0	0	0	0	0	0
1-3-2-3	-	0	0	0	0	0	0	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

\+ SIGNIFICANTLY GREATER
\- SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

FIGURE 15

SIGNIFICANCE MATRIX FOR COMPARISON OF DIFFERENCES BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BASED ON COST PER RELATIVE VALUE UNIT

	1-0-1-1	1-1-1-2	1-2-1-2	1-2-1-3	1-2-2-2	1-2-2-3	1-3-1-3	1-3-2-3
1-0-1-1	0	+	+	+	0	+	+	+
1-1-1-2	–	0	0	0	0	0	0	0
1-2-1-2	–	0	0	0	0	0	0	0
1-2-1-3	–	0	0	0	0	0	0	0
1-2-2-2	0	0	0	0	0	0	0	0
1-2-2-3	–	0	0	0	0	0	0	0
1-3-1-3	–	0	0	0	0	0	0	0
1-3-2-3	–	0	0	0	0	0	0	0

DUNCANS'S MULTIPLE RANGE TEST ($p<.05$) WAS PERFORMED.

SIGNIFICANCE SYMBOLS

\+ SIGNIFICANTLY GREATER
– SIGNIFICANTLY LESSER
0 NO SIGNIFICANT DIFFERENCE

TABLE 1

RANK ORDER OF CONFIGURATIONS BY NUMBER OF WORK-WEEKS REPORTED

RANK	DENTAL OFFICERS (DO)	DENTAL THERAPY ASSISTANTS (DTA)	DENTAL ASSISTANTS (DA)	DENTAL TREATMENT ROOMS (DTR)	WORK-WEEKS REPORTED
1	1	0	1	1	1050
2	1	2	1	3	278
3	1	1	1	2	242
4	1	2	1	2	232
5	1	2	2	3	203
6	1	3	2	3	153
7	1	2	2	2	133
8	1	3	1	3	120
9	1	3	3	3	49
10	1	1	2	2	45
11	1	2	0	2	40
12	1	1	0	2	34
13	1	3	0	3	34
14	1	2	3	3	30
15	1	0	1	2	27
16	1	1	1	1	19
17	1	2	0	3	16
18	1	2	2	4	16
19	1	3	2	4	16
				TOTAL	2737

TABLE 2

DEMOGRAPHIC DISTRIBUTION OF THE MOST FREQUENTLY EMPLOYED HEALTH CARE DELIVERY TEAM CONFIGURATIONS

CONFIGURATION COMPOSITION				NUMBER OF WORK-WEEKS	NUMBER OF OHCDTS	NUMBER OF DENTAL ACTIVITIES
DO	DTA	DA	DTR			
1	0	1	1	1,050	89	20
1	1	1	2	242	17	8
1	2	1	2	232	18	10
1	2	1	3	278	19	7
1	2	2	2	133	9	4
1	2	2	3	203	13	7
1	3	1	3	120	9	5
1	3	2	3	153	11	6

TABLE 3

COMPARISON OF TYPE OF PRACTICE FOR EIGHT
ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS

CONFIGURATION COMPOSITION				PROPORTION OF WEIGHTED DENTAL PROCEDURES REPORTED FOR:							
DO	DTA	DA	DTR	RESTORATIVE		PREVENTIVE		DIAGNOSTIC		OTHER	
				MEAN	RANGE	MEAN	RANGE	MEAN	RANGE	MEAN	RANGE
1	0	1	1	.64	.24-.99	.03	0-.19	.08	0-.63	.22	0-.54
1	1	1	2	.75	.25-.95	.08	0-.17	.05	.01-.09	.10	.01-.50
1	2	1	2	.70	.54-.91	.17	.02-.36	.04	0-.14	.07	.02-.16
1	2	1	3	.73	.42-.81	.12	.04-.26	.04	0-.16	.10	.02-.22
1	2	2	2	.80	.56-.94	.10	.01-.27	.04	0-.11	.04	0-.09
1	2	2	3	.71	.56-.91	.17	0-.31	.03	0-.10	.07	.02-.17
1	3	1	3	.62	.37-.80	.18	.04-.28	.10	0-.27	.09	.02-.17
1	3	2	3	.69	.50-.89	.15	.02-.25	.07	.02-.14	.07	.01-.14
ENTIRE POPULATION				.68		.09		.06		.14	

TABLE 4

COMPARISON OF TYPE OF PRACTICE FOR EIGHT
ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS

CONFIGURATION COMPOSITION				PROPORTION OF UNWEIGHTED DENTAL PROCEDURES REPORTED FOR:							
				RESTORATIVE		PREVENTIVE		DIAGNOSTIC		OTHER	
DO	DTA	DA	DTR	MEAN	RANGE	MEAN	RANGE	MEAN	RANGE	MEAN	RANGE
1	0	1	1	.64	.15-.99	.05	0-.28	.15	0-.79	.14	0-.39
1	1	1	2	.73	.26-.92	.10	.01-.23	.09	.01-.25	.06	0-.34
1	2	1	2	.67	.49-.93	.21	.03-.44	.06	0-.21	.04	0-.08
1	2	1	3	.71	.36-.84	.15	.05-.33	.07	0-.30	.05	.01-.14
1	2	2	2	.78	.52-.97	.11	.01-.29	.06	0-.17	.03	0-.07
1	2	2	3	.68	.53-.93	.21	0-.35	.05	0-.18	.03	.01-.08
1	3	1	3	.56	.34-.70	.23	.04-.33	.15	.02-.35	.04	.01-.08
1	3	2	3	.64	.41-.87	.17	.03-.30	.11	.04-.19	.05	.01-.09
ENTIRE POPULATION				.67		.12		.11		.08	

TABLE 5

AVERAGE NUMBER OF PATIENTS TREATED PER WEEK FOR
EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS

CONFIGURATION COMPOSITION				AVERAGE NUMBER OF PATIENTS PER WEEK*	STANDARD DEVIATION	NUMBER OF WORK WEEKS
DO	DTA	DA	DTR			
1	0	1	1	38	24.44	1,032
1	1	1	2	54	26.50	206
1	2	1	2	55	14.25	229
1	2	1	3	58	20.56	270
1	2	2	2	56	13.05	133
1	2	2	3	61	17.61	201
1	3	1	3	79	35.21	113
1	3	2	3	79	19.65	152

*ANALYSIS OF VARIANCE WAS PERFORMED
(F= 114.435(7/2328), P <.0001)

TABLE 6

COMPARISON OF PRODUCTIVITY BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BY MEAN UNWEIGHTED DENTAL PROCEDURES PER WEEK

CONFIGURATION COMPOSITION				OVERALL CONFIGURATION MEAN RAW PROCEDURES PER WEEK *	STANDARD DEVIATION OF OVERALL CONFIGURATION MEAN	RANGE				WORK-WEEKS REPORTED
						INDIVIDUAL TEAMS MEAN RAW PROCEDURES PER WEEK		INSTALLATION MEAN RAW PROCEDURES PER WEEK		
DO	DTA	DA	DTA			LOW	HIGH	LOW	HIGH	
1	0	1	1	91	58.37	21	176	50	139	1,050
1	1	1	2	172	95.33	101	347	103	347	242
1	2	1	2	222	86.87	126	376	117	288	232
1	2	1	3	223	88.46	123	347	168	347	278
1	2	2	2	247	106.73	135	380	209	367	133
1	2	2	3	249	92.97	150	396	184	397	203
1	3	1	3	281	131.56	187	433	189	433	120
1	3	2	3	311	83.70	291	395	291	344	153

* Analysis of Variance was performed for overall configuration means ($F-308.998(7/2403, p < .0001)$)

TABLE 7

COMPARISON OF PRODUCTIVITY BETWEEN EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS BY MEAN RELATIVE VALUE UNITS (RVU) PER WEEK

CONFIGURATION COMPOSITION				OVERALL CONFIGURATION MEAN RVUs/WEEK *	STANDARD DEVIATION	RANGE OF INDIVIDUAL TEAM MEAN RVUs/WEEK	RANGE OF INSTALLATION MEAN RVUs/WEEK	WORK-WEEKS REPORTED
DO	DTA	DA	DTR					
1	0	1	1	812	538.24	340-2,264	365-1,268	1,050
1	1	1	2	1,344	1,052.60	737-3,785	900-3,785	242
1	2	1	2	1,492	535.74	732-2,167	938-1,887	232
1	2	1	3	1,595	734.69	877-2,913	1243-2,913	278
1	2	2	2	1,623	77.44	980-2,305	1284-2,184	133
1	2	2	3	1,669	583.45	1013-2,295	1203-2,295	203
1	3	1	3	2,009	1,002.74	1232-3,918	1471-2,399	120
1	3	2	3	1,978	522.38	1542-2,442	1614-2,346	153

* ANALYSIS OF VARIANCE WAS PERFORMED ($F=146.781(7/2403)$, $P < .01$)

TABLE 8

AVERAGE NUMBER OF RESTORATIONS PLACED PER WEEK BY EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS

CONFIGURATION COMPOSITION				RESTORATIONS PER WEEK*	STANDARD DEVIATION	NUMBER OF WORK-WEEKS REPORTED
DO	DTA	DA	DTR			
1	0	1	1	259	142.92	1050
1	1	1	2	542	232.99	242
1	2	1	2	608	250.37	232
1	2	1	3	719	294.05	278
1	2	2	2	803	252.36	133
1	2	2	3	751	355.15	203
1	3	1	3	640	349.06	120
1	3	2	3	818	304.12	153

*ANALYSIS OF VARIANCE WAS PERFORMED ($F = 305.334(7/2403)$, $P < .0001$)

TABLE 9

AVERAGE COST PER PATIENT TREATED FOR EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS

CONFIGURATION COMPOSITION				AVERAGE COST PER PATIENT*	STANDARD DEVIATION	WORK WEEKS REPORTED
DO	DTA	DA	DTR			
1	0	1	1	$17.93	13.82	1032
1	1	1	2	16.50	10.13	206
1	2	1	2	18.47	7.42	229
1	2	1	3	17.47	7.13	270
1	2	2	2	20.77	7.46	133
1	2	2	3	19.89	9.50	201
1	3	1	3	16.25	5.38	113
1	3	2	3	17.49	5.38	152

*ANALYSIS OF VARIANCE WAS PERFORMED
($F = 3.262(7/2328)$, $P < .002$)

TABLE 10

COMPARISON OF COST PER UNWEIGHTED DENTAL PROCEDURE FOR EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS

CONFIGURATION COMPOSITION				OVERALL CONFIGURATION MEAN COST PER RAW PROCEDURE*	STANDARD DEVIATION	RANGE				WORK-WEEKS REPORTED
						INDIVIDUAL TEAM MEAN COST PER RAW PROCEDURE		INSTALLITION MEAN COST PER RAW PROCEDURE		
DO	DTA	DA	DTR			LOW	HIGH	LOW	HIGH	
1	0	1	1	$7.54	6.2854	$3.50	$27.74	$3.92	$15.22	1,050
1	1	1	2	5.36	2.9679	2.18	8.11	2.18	7.52	242
1	2	1	2	5.15	3.6657	2.49	11.40	3.49	10.12	232
1	2	1	3	4.85	2.2460	2.82	7.89	2.82	5.97	278
1	2	2	2	5.44	3.1446	2.98	8.33	3.08	6.79	133
1	2	2	3	5.09	2.2830	2.83	7.77	2.83	6.57	203
1	3	1	3	4.72	1.7050	2.89	6.30	3.28	6.30	120
1	3	2	3	4.55	1.5932	3.41	5.76	4.13	5.34	153

*ANALYSIS OF VARIANCE WAS PERFORMED (F = 25.597(7/2403), P < .0001)

TABLE 11

COMPARISON OF COST PER WEIGHTED DENTAL PROCEDURE (RELATIVE VALUE UNITS) FOR EIGHT ORAL HEALTH CARE DELIVERY TEAM CONFIGURATIONS

CONFIGURATION COMPOSITION				OVERALL CONFIGURATION MEAN COST PER RVU *	STANDARD DEVIATION	TEAM MEAN COST PER RVU		INSTALLATION MEAN COST PER RVU		WORK-WEEKS REPORTED
DO	DTA	DA	DTR			LOW	HIGH	LOW	HIGH	
1	0	1	1	$0.85	.6201	$0.25	$2.11	$0.53	$2.11	1,050
1	1	1	2	0.77	.4966	0.20	1.15	0.20	0.97	242
1	2	1	2	0.76	.6061	0.43	1.79	0.50	1.48	232
1	2	1	3	0.69	.3217	0.33	1.11	0.33	0.86	278
1	2	2	2	0.78	.4033	0.49	1.14	0.52	0.87	133
1	2	2	3	0.75	.3287	0.48	1.12	0.48	0.97	203
1	3	1	3	0.68	.2770	0.29	0.94	0.55	0.89	120
1	3	2	3	0.71	.2281	0.55	0.87	0.60	0.83	153

* ANALYSIS OF VARIANCE WAS PERFORMED ($F = 4.777(7/2403)$, $P. < .0001$)

APPENDIX A

DENTAL SERVICE REPORT

DENTAL SERVICE REPORT

REPORT CONTROL SYMBOL MED-85

☐ ARMY ☐ NAVY ☐ AIR FORCE

REPORTING FACILITY AND LOCATION

Installation
Clinic
Installation Number _____ Team (Dentist) Number _____

PERIOD COVERED

PART I - DENTAL PROCEDURES

	ARMY A	NAVY-MARINE B	AIR FORCE C	DEPENDENTS D	ALL OTHER E	TOTAL F	G
A. OPERATIVE AND CROWN AND BRIDGE							
1. AMALGAM *(One surface)*							
2. AMALGAM *(Two or more surfaces)*							
3. BASE INTERMEDIATE							
4. RESIN							
5. ROOT CANAL FILLING *(Teeth)*							
6. SILICATE							
7. TEMPORARY OR SEDATIVE FILLING							
8. Filling Polished							
9. GOLD *(Inlay, foil)*							
10. BRIDGE							
11. GOLD CROWN *(All types)*							
12. RESIN CROWN							
13. RESIN CROWN WITH METAL							
14. OTHER CROWNS							
15. CROWN OR BRIDGE REPAIR							
16. Casts							
B. PROSTHODONTICS							
17. DENTURE, RECONST., RELINE, REPAIR							
18. FULL DENTURE							
19. PARTIAL DENTURE							
20. OTHER MAXILLOFACIAL APPLIANCES							
21. Orthodontic Appliance							
C. ORAL SURGERY							
22. ABSCESS, INCISION AND DRAINAGE							
23. ALVEOLECTOMY							
24. APICOECTOMY							
25. BIOPSY							
26. CYSTECTOMY							
27. FRACTURE MANDIBLE REDUCTION							
28. FRACTURE MAXILLA REDUCTION							
29. FRACTURE *(Other)* REDUCTION							
30. ROOT RESIDUAL - REMOVAL							
31. TOOTH REMOVAL							
32. TUMORS *(All types)* EXCISION							
33. Cellulitis							
34.							
35.							
36.							
D. PERIODONTICS AND ORAL HYGIENE							
37. EQUILIBRATION							
38. GINGIVECTOMY							
39. GINGIVITIS OR STOMATITIS TREATMENT							
40. PROPHYLAXIS							
41. SCALING *(Periodontal)*							
42. CARIES PREVENTION TREATMENT							
43. Preventive Dentistry Counseling							

DD FORM 1 OCT 93 477

PREVIOUS EDITIONS ARE OBSOLETE.

PART I - DENTAL PROCEDURES (Continued)							
	ARMY A	NAVY-MARINE B	AIR FORCE C	DEPENDENTS D	ALL OTHER E	TOTAL F	G
E. RADIODONTICS							
44. INTRA-ORAL ROENTGENOGRAM							
45. EXTRA-ORAL ROENTGENOGRAM							
F. OTHER							
46. EXAMINATIONS (Types 1, 2, and 3)							
47. ORTHODONTIC TREATMENT							
48. POST OPERATIVE TREATMENT							
49. Perio Screening Examination							
50. Hours of Operation							
51. TOTAL PROCEDURES LINES 1 - 50							
52. TOTAL PATIENTS TREATED							

PART II - LABORATORY DATA	NUMBER
A. TEETH REPLACED IN ITEMS 10 AND 19, PART I	
B. PROSTHETIC APPLIANCES PROCESSED (Items under Part I, Section B)	
1. ENTIRELY IN REPORTING FACILITY	
2. PARTLY IN OTHER FACILITY (Name)	
3. ENTIRELY IN OTHER FACILITY (Name)	
C. CHROME-COBALT OR OTHER NON-PRECIOUS METAL APPLIANCES	
1. CAST LOCALLY DURING REPORTING PERIOD	
2. MAXIMUM MONTHLY POTENTIAL OUTPUT	

PART III - CLASSIFICATION OF ACTIVE DUTY PERSONNEL (At end of month)

	MILITARY STRENGTH SERVED		NUMBER CLASSIFIED	CL. 1	CL. 2	CL. 3	CL. 4	CL. 5
	REPORTING FACILITY	OTHER						
1. ARMY								
2. NAVY-MARINE								
3. AIR FORCE								
4. TOTAL								
5. GRAND TOTAL								

PART IV - REMARKS

TEAM CONFIGURATION

Number of Dental Officers _____

Number of Dental Assistants _____

Number of Dental Therapy Assistants _____

Number of Dental Treatment Rooms (Chairs) _____

Check one: Open Bay _____

Individual Room(s) _____

Name and Rank of Dental Officer _____

Name and Rank/GS Grade of each DTA _____

DATE	TYPED OR PRINTED NAME AND GRADE	SIGNATURE

* U.S. GOVERNMENT PRINTING OFFICE: 1961 O - 579432

CATEGORIES OF CARE

RESTORATIVE:

1. Amalgam (One surface)
2. Amalgam (Two or more surfaces)
3. Base Intermediate
4. Resin
6. Silicate
7. Temporary or Sedative Filling
8. Filling Polished
9. Gold (Inlay, foil)
11. Gold Crown (All types)
12. Resin Crown
13. Resin Crown With Metal
14. Other Crowns

PREVENTIVE:

40. Prophylaxis
41. Scaling (Periodontal)
42. Caries Prevention Treatment

DIAGNOSTIC:

44. Intra-Oral Roentgenogram
45. Extra-Oral Roentgenogram
46. Examinations (Types 1,2, and 3)
49. Perio Screening Examination

OTHER:

5. Root Canal Filling (Teeth)
10. Bridge
15. Crown or Bridge Repair
16. Casts
17. Denture, Reconst., Reline, Repair
18. Full Denture
19. Partial Denture
20. Other Maxillofacial Appliances
21. Orthodontic Appliance
22. Abscess, Incision and Drainage
23. Alveolectomy
24. Apicoectomy
25. Biopsy
26. Cystectomy
27. Fracture Mandible Reduction
28. Fracture Maxilla Reduction
29. Fracture (Other) Reduction
30. Root Residual-Removal
31. Tooth Removal
32. Tumors (All types) Excision
33. Cellulitis
37. Equilibration
38. Gingivectomy
39. Gingivitis or Stomatitis Treatment
47. Orthodontic Treatment
48. Post Operative Treatment

APPENDIX B

WEIGHTS FOR RELATIVE VALUE UNITS

DENTAL PROCEDURES	RVU FACTOR
A. Operative and Crown and Bridge	
1. Amalgam (One surface)	8.0
2. Amalgam (Two or more surfaces)	11.0
3. Base Intermediate	3.0
4. Resin	11.0
5. Root Canal Filling (Teeth)	45.0
6. Silicate	9.0
7. Temporary or Sedative Filling	9.0 *
8. Filling Polished	6.0 *
9. Gold (Inlay foil)	35.0
10. Bridge	20.0
11. Gold Crown (All types)	65.0
12. Resin Crown	60.0
13. Resin Crown with Metal	75.0
14. Other Crowns	65.0
15. Crown or Bridge Repair	10.0
16. Casts	5.0 *
B. Prosthodontics	
17. Denture, Reconst., Reline, Repair	12.0
18. Full Denture	155.0
19. Partial Denture	150.0
20. Other Maxillofacial Applicances	70.0
21. Orthodontic Appliance	40.0
C. Oral Surgery	
22. Abcess, Incision and Drainage	10.0
23. Alveolectomy	10.0
24. Apicoectomy	35.0
25. Biopsy	10.0
26. Cystectomy	25.0
27. Fracture Mandible Reduction	200.0
28. Fracture Maxilla Reduction	200.0
29. Fracture (Other) Reduction	100.0
30. Root residual - Removal	8.0
31. Tooth Removal	8.0
32. Tumors (All types) Excision	25.0
33. Cellulitis	10.0
D. Periodontics and Oral Hygiene	
37. Equilibration	20.0
38. Gingivectomy	50.0
39. Gingivitis or Stomatitis Treatment	5.0

DENTAL PROCEDURES (CONT)	RVU FACTOR
40. Prophylaxis	9.0
41. Scaling (Periodontal)	3.0
42. Caries Prevention Treatment	5.0
43. Preventive Dentistry Counseling	5.0
E. Radiodontics	
44. Intra-Oral Roentgenogram	4.0
45. Extra-Oral Roentgenogram	12.0
F. Other	
46. Examinations (Types 1, 2, and 3)	4.0
47. Orthodontic Treatment	5.0 *
48. Post Operative Treatment	3.0
49. Perio Screening Examination	4.0

* Assigned by HCSD